PD13-3:
CLINICAL CHARACTERISTICS AND IMMUNOCHEMICAL STUDY OF UROTHELIAL DYSFUNCTION IN THE PATIENTS WITH INTERSTITIAL CYSTITIS/BLADDER PAIN SYNDROME WITH AND WITHOUT HUNNER'S LESION

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Purpose: Current consensus suggests the patients with interstitial cystitis(IC)/bladder pain syndrome (BPS) could be subdivided into two types, ulcerative and non-ulcerative, according to cystoscopic finding. The clinical characteristics in the patients with ulcerative and non-ulcerative IC/BPS are different, but the pathophysiology and underlying mechanism difference between these patients were still unclear. The objective of this study is to investigate the urothelium difference and clinical characteristics in the patients with ulcerative and non-ulcerative IC/BPS
Materials and Methods: Ten female patients with ulcer IC/BPS and 22 patients with non-ulcer IC/BPS who were admitted for cystoscopic hydrodistention were prospectively enrolled into this study. Bladder mucosa biopsy was taken during the procedure. Immunofluorescence staining and quantification of the adhesion protein E-cadherin, tight junction protein zona occuldens-1 (ZO-1), sensory protein M2, M3, P2X3 were carried out. Tryptase levels, eNOS and a TUNEL assay were used to assess mast-cell activation, inflammation and urothelial apoptosis, respectively. Ten healthy control bladder biopsies were also taken for staining
Results: The patients with ulcer IC/BPS is significantly older than the patients with non-ulcer IC/BPS (57.38 ± 7.76 vs. 46.59 ± 13.88, $p = 0.013$). The VAS is significant higher in the ulcer IC/BPS, while the cystometric bladder capacity and urgency snesation in urodynamic study are smaller. Both ulcer and non-ulcer IC/PBS patients had lower E-cadherine, ZO-1 and M3 in bladder tissue than healthy control. Both ulcer and non-ulcer IC/BPS groups also had higher typtase and TUNEL than control group. The bladder tissue of ulcer IC/BPS have significantly lower E-cadherin and higher TUNEL than that non-ulcer IC/BPS bladder tissue (12.71 ± 9.77 vs 25.00 ± 13.30, $p = 0.011$; 3.83 ± 3.21vs 1.80 ± 1.82, $p = 0.05$, respectively). The eNOS expression in ulcer type IC/BPS is also higher than that in non ulcer IC/BPS (0.46 ± 0.32 vs 0.07 ± 0.08, $p<0.001$).
Conclusion: Our data suggested the patients of ulcer IC/BPS had more severe clinical symptoms. The bladder tissues of IC/BPS patients had defective adhesion protein, increased suburothelial inflammation, urothelial cell apoptosis and M3 receptor. The defective bladder barrier function, urothelial cell apoptosis and eNOS induced inflammation are more severe in the patients with ulcer IC/BPS than that in the patients with non-ulcer IC/BPS.

PD13-4:
HYPOXIA INDUCED AKT2 COULD MEDIATE DEVELOPMENT OF BENIGN PROSTATIC HYPERPLASIA IN FRUCTOSE-FED RATS

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Purpose: We studied the relation between hypoxia and Akt2 in pathogenesis of benign prostatic hyperplasia (BPH) in fructose-fed rats.
Materials and Methods: Dorsolateral lobe of prostate was harvested from fructose-fed rats and normal rats. The expression of HIF-1α and AKT2 was investigated in rat prostate. Hypoxic treatment was conducted in normal rat prostate cell line (YPEN-1) and rat prostatic tumor cell line (AT3B-1) to study the level of Hif-1α and Akt2. The expression of Akt2 in both cell lines was indentified via gain and loss of Hif-1α function. Cell proliferation was explored in both cell lines under normoxia and hypoxia, as well as overexpression and knockdown of Akt2.
Results: High protein expression of HIF-1α and AKT2 was found in prostate was harvested from fructose-fed rats. Expression of Hif-1α and Akt2 were elevated in YPEN-1 and AT3B-1 under hypoxia. Expression level of Akt2 increased in YPEN-1 with overexpression of Hif-1α under normoxia. Promotion of cell proliferation developed in YPEN-1 under hypoxia, as well as overexpression of Akt2 under normoxia. Reduction of cell proliferation was identified in AT3B-1 with knockdown of Akt2 under hypoxia.
Conclusion: Hypoxia induced Akt2 could mediate development of BPH in fructose-fed rats.

PD13-5:
CHLORIDE CHANNELS ARE INVOLVED IN THE REGULATION OF BLADDER SMOOTH MUSCLE TONE IN RATS.

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Purpose: Ion channels have been proved to be of functional importance in the regulation of bladder smooth muscle (SM) tone. The role of chloride channels on the bladder SM tissue has not been elucidated. We investigated the physiological roles of CLC-3 chloride channel and calcium-activated chloride channel (CaCC) on the maintenance of bladder SM tone in isolated rat bladder tissues.
Materials and Methods: Bladder smooth muscle tissue strips (2 x 2 x 10 mm) were suspended in tissue bath chambers for isometric tension experiments. Contractions elicited by KCl were examined in the condition of changing concentration of extracellular chloride (ECl) from 138 mM to 8 mM and substitution of extracellular Cl^- to Br^- or I^-. Contractions elicited by norepinephrine (NE) were examined in the presence of chloride transport inhibitors: bumetanide (BUM), 4-(2-hydroxyethyl)-1-1- piperazine ethanesulphonic acid (HEPES) without bicarbonate, ethacrynic acid (ETH), and chloride channel blockers: 4,4'-diisothiocyano-2,2'-stilbenedisulfonic acid (DIDS), anthracene-9-carboxylic acid (A9C) and niflumic acid (NFA) (All concentration: 10^-8M~1M).
Results: In bladder SM strips the KCl induced contractility decreased significantly as the concentration of ECl changed from 138 to 8 mM ($p<0.01$). The KCl elicited contractile response also decreased significantly as the extracellular Cl^- was substituted by Br^- or I^- ($p<0.01$). In addition, pretreatment with BUM, HEPES or ETH could significantly suppress the NE induced contractility in a concentration dependent manner (all $p<0.01$). Pretreatment with DIDS, A9C or NFA could also significantly reduce the NE elicited contractile response in a concentration dependent manner (all $p<0.01$).
Conclusion: Our results imply that both CLC-3 chloride channel and CaCC are of functional importance in the regulation of bladder smooth muscle tone.

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PD13-6:
EFFECTS OF BA-WEI-DIE-HUANG-WAN ON CYCLOPHOSPHAMIDE-INDUCED ONGOING BLADDER OVERACTIVITY AND ACIDIC ATP SOLUTION-INDUCED PROVOKING OF BLADDER OVERACTIVITY

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Purpose: To investigate effects of Ba-Wei-Die-Huang-Wan (BWDHW) on cyclophosphamide (CYP)-induced ongoing bladder overactivity and acidic adenosine triphosphate (ATP) solution-induced provoking of bladder overactivity.
Materials and Methods: Female Wistar rats were injected with CYP (100 mg/kg) or saline respectively. Rats were treated with BWDHW (90 mg/kg/day) or vehicle for five days. Both the metabolic cage study and cystometry were evaluated. Acidic ATP solution (5 mM, pH 3.3) was instilled to provoke bladder overactivity. Bladder mucosa and muscle proteins were assessed by Western blotting.
Results: As compared to the controls, the CYP group showed significantly decreased mean cystometric intercontractile interval and increased micturition frequency, whereas the CYP/BWDWH group did not. The CYP group had significant protein overexpression in mucosal M2, M3, P2X2, and P2X3 receptors as well as detrusor M2 and M3 receptors. However, the CYP/BWDWH group had insignificant changes from controls. In the provoking test, the control/BWDHW and CYP/BWDHW groups were less affected by acidic ATP stimulation of intercontractile interval changes than